UNITED STATES PATENT AND TRADEMARK OFFICE

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10/803,972	03/19/2004	Naoki Saikusa	01480088AA	6494

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _19 March 2007_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-17_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _2-7,12 and 14-17_ is/are allowed.

6)☒ Claim(s) _1,8-11 and 13_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1.   Claim 1, 8-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph (US 2003/0108063) in view of Heink (US 2003/0174729) and Aoki (US 6,529,548).

Regarding claims 1 and 13, Joseph describes a network connection system providing a method for connecting a first communication network and a plurality of user terminals (fig. 2, system 300 connecting internet 21 (first communication network) to users at user's site 20), when a second communication network is interposed between said first communication network and said plurality of user terminals (fig. 2, 22 & 23 (second communication network is in between), said second communication network employing a second protocol different from a first protocol employed in said first communication network (para. 44, 22 & 23 passes internet [IP] traffic using ATM protocol) , said system comprising:

Joseph describes a scheduling apparatus (para. 37), but fails to describe:

an overhead amount correction unit for correcting an overhead amount between data conforming to said second protocol and data conforming to said first protocol to convert received information on a rate based on said second protocol to a rate based on said first protocol (para. 37, 39, 106-107, conversion unit adds overhead & trailing bits to ATM data in conforming to Ethernet, in adjusting to ATM cell's higher rates, para. 24);

a scheduler for shaping a transmission rate for the data conforming to said first protocol from said first communication network such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate

shapes higher rate ATM cells to a [slower] rate ethernet frames by inserting ethernet

overhead bits).

a protocol converter for converting data conforming to said first protocol after said

scheduling apparatus has shaped the transmission rate therefor to data conforming to

said second protocol for use in said second network (fig. 16 & 10, egress ATM port

converts data back to ATM cells (first protocol) from the Ethernet switch 7); and

a multiplexer being configured to transmit to each of said user terminals the data

conforming to said first protocol after said scheduling apparatus has shaped the

transmission rate therefor (fig. 10 & 16, para. 101, mux 17 transmits to ethernet out of

the DSLAM to users at the ethernet LAN).

Heink describes:

a scheduling apparatus (para. 37) including:

an overhead amount correction unit for correcting an overhead amount between

data conforming to said second protocol and data conforming to said first protocol to

convert received information on a rate based on said second protocol to a rate based on

said first protocol (para. 37, 39, 106-107, conversion unit adds overhead & trailing bits

to ATM data in conforming to Ethernet, in adjusting to ATM cell's higher rates, para. 24);

a scheduler for shaping a transmission rate for the data conforming to said first

protocol from said first communication network such that the data conforming to said

first protocol is delivered at a transmission rate equal to or lower than said rate

calculated by said overhead amount correction unit (para. 39 & 24, scheduling unit

shapes higher rate ATM cells to a [slower] rate ethernet frames by inserting ethernet overhead bits).

a protocol converter for converting data conforming to said first protocol after said scheduling apparatus has shaped the transmission rate therefor to data conforming to said second protocol for use in said second network (fig. 16 & 10, egress ATM port converts data back to ATM cells (first protocol) from the Ethernet switch 7); and

a multiplexer being configured to transmit to each of said user terminals the data conforming to said first protocol after said scheduling apparatus has shaped the transmission rate therefor (fig. 10 & 16, para. 101, mux 17 transmits to ethernet out of the DSLAM to users at the ethernet LAN).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate an overhead amount correction unit, a scheduler, a protocol converter and a multiplexer with the above specifications for the system of Joseph.

The motivation for combining the teachings is that it can support a large number of xDSL transmission lines (para. 111).

Aoki describes a data communication receiver subsystem (fig. 1) comprising:

a multiplexer including a current data detector for supplying said scheduling apparatus with said rate information as indicative of a currently set reception rate for said user terminals (col. 8, lines 11-19, information relay 16 as part of mux 17 detects rate and supplies the BAUD rate to the output receiver-transmitter UART device).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate the multiplexing subsystem of Aoki for the multiplexer of Joseph and Heink.

The motivation for combining the teachings is that by providing the communications rate, it lessens the likelihood that data reception is to fail (Aoki, col. 2, lines 2-6).

Regarding claim 8, Joseph, Heink and Aoki combined further describe: the current rate detector periodically applies the rate information to said scheduling apparatus at regular time intervals (col. 2, lines 56-66, monitoring for each time period for power savings).

Regarding claim 9, Joseph, Heink and Aoki combined further describe: said current rate detector applies the rate information to said scheduling apparatus when the set rate based on said second protocol is updated (col. 7, lines 13-24, applies the baud rate of the input serial data when the serial data is provided).

Regarding claim 10, Joseph, Heink and Aoki combined further describe: said current rate detector supplies said scheduling apparatus with said rate information as indicative of a transmission rate set between a user terminal and said multiplexer in the event of hand-shaking (col. 7, lines 13-24 & col. 8, lines 11-19, providing the output subsystem the baud rate information indicative of the transmission rate to be used (handshake)).

Regarding claim 11. Joseph further describes: said first communication network

is an IP network, said data conforming to said first protocol is an IP packet, said second

network is an ATM network, and said data conforming to said second protocol is an

ATM cell (fig. 3, internet 21 (first communication network)'s data is IP, going into ISP &

CO 22, 23 (second communication network) being ATM cells).

Regarding claim 13, it is a method claim comprising a subset of claim 1. Thus,

it is rejected under the same rationale as claim 1.

Allowable Subject Matter

2.   Claims 2-7, 12 and 14-17 allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 2, the prior art fails to describe, <u>in addition to</u> claim 1

limitations, the limitations of:

"a classification processing unit for classifying data conforming to said first

protocol received from said communication network based on quality guaranteed

classes set thereto; a rate measuring unit for measuring a transmission rate for a

preferential class among said classified classes";

"a weighting coefficient calculation unit for calculating a weighting coefficient

based on said rate calculated by said overhead amount correction unit such that a

minimally guaranteed rate is assured for a minimum rate guaranteed class among

classes classified by said classification processing unit;

a weighting scheduler for scheduling data conforming to said first protocol of said

minimum rate guaranteed class and of a weighting applied class among said classified

classes based on the weighting coefficient calculated by said weighting coefficient

calculation unit to deliver the data in accordance with the scheduling".

Regarding claim 3, the prior art fails to describe, in addition to claim 2

limitations, the limitations of (expanded version of claim 2's weighting scheduler):

"a preferential control scheduler for scheduling the data conforming to said first

protocol from said weighting scheduler, and data conforming to said first protocol of a

best-effort class among said classified classes such that the data conforming to said

first protocol is delivered at a transmission rate equal to or lower than said rate

calculated by said overhead amount correction unit, and for preferentially scheduling the

data conforming to said first protocol of said preferential class, preferentially scheduling

the data conforming to said first protocol from said weighting scheduler at a timing at

which there is no data conforming to said first protocol of said preferential class, and

delivering the data conforming to said first protocol of the best-effort class at a timing at

which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 4, the prior art fails to describe, in addition to claim 1

limitations, the limitations of (variant of claim 3's preferential control scheduler):

"a preferential control scheduler for scheduling the data conforming to said first

protocol from said weighting scheduler, and data conforming to said first protocol of said

preferential class, the data conforming to said first protocol of a best-effort class among

said classified classes such that the data conforming to said first protocol is delivered at

a transmission rate equal to or lower than said rate calculated by said overhead amount

correction unit, and for preferentially scheduling the data conforming to said first

protocol of said preferential class, preferentially scheduling the data conforming to said

first protocol from said weighting scheduler at a timing at which there is no data

conforming to said first protocol of said preferential class, and delivering the data

conforming to said first protocol of the best-effort class at a timing at which there is no

data conforming to said first protocol from said weighting scheduler".

Regarding claim 5, the in addition to claim 1 limitations, new limitations plus

limitations comprising a variant of claim 3's preferential control scheduler and expanded

claim 2's weighting coefficient calculation unit and weighting scheduler):

"a preferential class upper limit setting unit, operative when the difference

between the transmission rate of the data conforming to said first protocol of the

preferential class a measure by said rate measuring unit and said rate calculated by

said overhead amount correction unit is lower than a minimally guaranteed rate for a

minimum rate guaranteed class among the classes classified by said classification

processing unit, for setting an upper limit to the transmission rate for said preferential

class for shaping, such that the minimally guraranteed rate can be assured for said

minimum rate guaranteed class;

a weighting coefficient calculation unit for calculating a weighting coefficient

based on said rate calculated by said overhead amount correction unit and the

transmission rate for the preferential class measured by said rate measuring unit such that a minimally guaranteed rate is assured for the minimum rate guaranteed class among the classes classified by said classification processing unit;

a weighting scheduler for scheduling data conforming to said first protocol of said minimum rate guaranteed class and of a weighting applied class among said classified classes based on the weighting coefficient calculated by said weighting coefficient calculation unit to deliver the data in accordance with the scheduling; and

a preferential control scheduler for scheduling the data conforming to said first protocol of said preferential class, the data conforming to said first protocol from said weighting scheduler, and data conforming to said first protocol of a best-effort class among said classified classes such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit, and for preferentially scheduling the data conforming to said first protocol of said preferential class, preferentially scheduling the data conforming to said first protocol from said weighting scheduler at a timing at which there is no data conforming to said first protocol of said preferential class, and delivering the data conforming to said first protocol of the best-effort class at a timing at which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 6, it is a systems claim comprising similar limitations of claim 2, with the exception of expanding the scheduler limitations to the preferential control scheduler of claim 4).

Regarding claim 7, it is a systems claim comprising similar limitations of claim 3, with the exception of expanding the preferential control scheduler of claim 6.

Regarding claim 12, it is a method claim comprising a subset of claim 3, where prior art cannot find the following limitations:

"scheduling the data conforming to said first protocol from said weighting scheduler, and data conforming to said first protocol of a best-effort class among said classified classes such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit, and for preferentially scheduling the data conforming to said first protocol of said preferential class, preferentially scheduling the data conforming to said first protocol from said weighting scheduler at a timing at which there is no data conforming to said first protocol of said preferential class, and delivering the data conforming to said first protocol of the best-effort class at a timing at which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 14, it is a method claim with inventive limitations as stated for system claim 4.

Regarding claim 15, it is a method claim with inventive limitations as stated for system claim 5.

Regarding claim 16, it is a method claim with inventive limitations as stated for system claim 6.

Regarding claim 17, it is a method claim with inventive limitations as stated for system claim 7.

The closes prior art, Haddock (US 2004/0081093), disclose conventional policy based QoS which identifies ingress traffic to a QoS group and performs scheduling, either singularly or in combination, fail to anticipate or render the above features obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Yamanaka (US 7,088,724) describing a communication system interfacing control of QoS of ATM and IP, Baum (US 6,904,054) describing a support for QoS and vertical services in digital subscribers domain, Kamiya (US 5,974,033) describing a dynamic shaping apparatus for traffic in ATM network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Warner Wong whose telephone number is 571-272-8197. The examiner can normally be reached on 6:30AM - 3:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
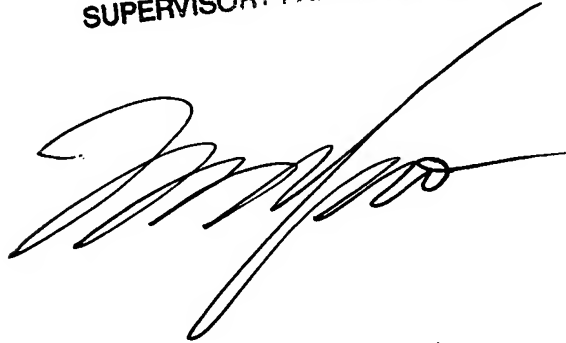
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Warner Wong
Examiner
Art Unit 2616

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER